SINC - LINK

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SincBits

Ian Robertson

UPDATES: Postal rates in the UK have recently taken a rather large jump. For example, an Air Mail letter from the UK to Canada is now 45p, up from 31p. If you have received any parcels via air mail lately you must have noticed the incredible number of one pound stamps affixed to it. A thought when it is a tossup between ordering identical software/hardware items from either a UK or US source. PERIPHERALS DIRECT, 312-498-9244, is selling off the AMDEK III 3" disk drives for the all-time low price of $45.00 for 1, or $100.00 for 4. The AMDEK III consists of two drives and a power supply, in a steel case. The only drawbacks are - the 3" disks are not readily available and they cost $40.00 US for 10, also this is an obsolete item so repairs could be a problem. But for that price, why not buy more than one and keep the other(s) for spare(s). A normal user would only need 30 disks. They hold 200k (or less) per side. Thirty disks holds 12 Mbytes. I personally have 40 disks and three units, used on the 2068, Spectrum and the QL. So far I have not run out of disk space. PV TUBES, 104 Abbey Street, Accrington BB5 1EE, Lancashire UK, have reissued their Sinclair Spare Parts Catalogue. I have a copy and will photocopy the pertinent pages for our Club Library. If you plan on keeping your Interface 1, Spectrum Plus/128, ZX-81, microdrives or QL, now is the time to order those spare parts for future use. They take plastic.

SPECTRUM: First, some BETA news. For Beta Disk Interface users - there is a User Group which publishes a bi-monthly newsletter at the reasonable price of $6.00 per annum. The address is MARTYN SMITH, BETA DISK USERS CLUB, 2 DOWNHAM AVE., RAWTENSTALL, ROSSENDALE, LANCASHIRE BB4 8JY, UK. Remember, this is an orphan interface now that Technology Research has disappeared! If anyone has a 128 version I would be interested in corresponding with you regarding it's performance. Better yet, I would love to buy one, if anyone is willing to sell. Users of BETA BASIC, versions 1.8, 3.0 or 4.0 (for 128k Spectrum), can subscribe to the BETA BASIC NEWSLETTER, published by Dr. Andrew Wright at BETASOFT 92 OXFORD STREET, MOSELEY, BIRMINGHAM B13 9SQ, UK. The existing 6 issues of this newsletter costs $6.00 and the next 6 bi-monthly issues will also be $6.00 (pounds sterling). One of our members will be selling his SPECTRUM PLUS and THE RAM MUSIC MACHINE - he is going on to bigger and better sounds. If you are interested call/write ORIN ZELENAK, RR#1, WEST LORNE, ONT. N0L 2P0, (519) 768-1738 (near London). I believe the package will sell for $230.00 CDN. Orin will include some music he has composed and there is a User Group for this system, in either the UK or Europe. If I did not already have a RAM on order I certainly would have bought it. His Spectrum will include a converted 120 volt power supply.

TS2068: Bad news for 2068 owners. We have been advised that nobody in North America is repairing 2068's. If anyone knows about a 2068 repair service, that is still in business, we would appreciate hearing about it. Now would also be a good time to sell your spare 2068, if you do not plan on putting it into service. Larry Kenny has done it one more time! He now has LKDOS Extended Basic Cartridges for the AERCO and OLIGER systems in addition to the RAMEX (as detailed in a previous column). The price is quoted at $65.00 US plus $5.00 shipping. For more info contact Larry at LARKEN ELECTRONICS, RR#2 NAVAN ONTARIO, CANADA K4B 1H9. Larry also has developed a 32k RAMDISK capability for the LKDOS Cartridges. He adds a 32k SRAM, which allows you to save 32k in 1 second. I will investigate this one! BILL JONES, of GULF SOFTWARE is going to start a quartarly Newsletter dedicated to the OLIGER DISK SYSTEM. Interested parties send $12.00 US to TS-2068 SAFE DISK UP-DATE, 1317 STRATFORD AVENUE, PANAMA CITY, FL 32404, U.S.A. It will be published starting Oct. 1st, 1987. RAMEX system users will be interested in knowing that MUNSON COCKAYNE, 342 TROTTER CT., SANFORD, FL 32771, U.S.A., is selling an SPDOS utilities disk or cassette for $12.00 US. The weather in Florida must be so continually sunny and boring that TS users prefer to stay inside and compute.

QL: Although the QL is considered to be a "DEAD" computer, there seems to be quite a bit of life in it's software/hardware sales. Latest software offerings include, SPELLBOUND (Sector Software) which is touted as being a "true" spelling checker, DESKTOP PUBLISHER (Digital Precision), FRONT PAGE EXTRA (Gap Software), CP/M EMULATOR (Sandy UK) and updates to TASKMASTER, THE EDITOR, TURBO, SUPERCHARGE, QLIBERATOR, EYE-Q and SUPER MEDIA MANAGER. On the hardware scene the QL TRUMP CARD (Miricle Systems) is a 768k Ram (for total of 896k) plus a disk interface which includes TK2 - and the latest THOR (Cambridge Systems Technology) now has a 68020 CPU, operating up to 16.7 MHz., in addition to the 3 1/2" drives and the 20 Mbyte hard drive. The August issue of QL WORLD promises to run a comparison between the DESKTOP PUBLISHER and the FRONT PAGE (improved). Should make interesting reading prior to purchasing. The CP/M (on eprom) has been updated since the review in the June issue of QL WORLD and now has almost a full 16k on eprom instead of the 4k at the time of the review. It is supposed to be much faster than the review copy. This one I have on order from SHARPS and should be able to comment on it by the next issue. According to Mark, at SHARPS,it is possible to have CP/M installed on their single replacemnt low power ROM.

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ZX MICROFAYRE

by G.F. Chambers

When I was in England in May I was fortunate enough to be there when the ZX Micro Fair was on. This exhibition is an annual affair devoted to all things Sinclair. It has been an annual event since the era of the first Sinclair computer.

The fair was held in an exhibition hall, and occupied a space, I would say , of about the size of a community hockey arena. Fortunately it was within walking distance of where I was staying.

When I arrived there was a lineup of about 100 persons. It was a mixture of all ages, mostly male. There were persons giving handouts to the lineup; advertising circulars mostly. There was one, a five-sheet handout which was a thinly disguised pyramid scheme. Claimed they were not a pyramid, because you were to receive some instructions for the pounds that you had to send to the name at the top of the list, etc.

I was surprised, although I shouldn't have been when I think about it, to find that all the real action was with the QL computer. There were many booths offering add-on memory, disk drives, and printers, and programs. The QL club "QUANTA" was present at one booth. They were offering memberships, and also back issues of their newsletter. However, they were all sold out by the time I got to their booth.

There was not very much for the Spectrum. There were several disk systems, and loads of software. Games essentially. Some of the booths had bins with budget games cassettes in them for 1.95 Pounds each. By noon there was quite a crowd around these bins, of young people pawing through the heap, trying to find some gems. Probably all the best ones were gone by then. There were two booths offering the program "Programmers Adventure Writer". This is a successor to the program QUILL (not the computer) which for several years has been the standard adventure utility.

There was next to nothing in the way of hardware being offered for the Spectrum. There was a booth offering Spectrum +3's, but the Amstrad presence was not visible. Very low-keyed. I did not see the newest Spectrum, the one with the disk drive onboard, although this is not surprising since they were not due out until July (now).

The ZX81 scene was absolutely dead. Well, not quite. One booth was offering mint ZX81's, in a slightly tongue in cheek way, a "Classic computer for 500 Pounds, a show special for you for 20 Pounds".

A very interesting visit, but just a little bit sad,to see the passing of the Spectrum from the scene.

.....

HOW SLOW IS IT?

by Mel Richardson

It has been written many times that Sinclair floating point arithmetic is awfully slow. But it's accurate! is sometimes exclaimed in defence. Well, just how slow and accurate is it? In the March 87 issue of SKY & TELESCOPE, T.S. Kelso of Austen TX presents a Basic version of a program outlined in BYTE, Vol 10, No. 11, 1985 called the "SAVAGE BENCHMARK". A Sinclair version is presented below that should be usable on all our machines and provide some interesting comparisons.

The principle of the program is 2499 iterations of three pairs of complementary functions (tan/arctan, exponent/log, square root/square). The number "1" is sent through this grinder and incremented by 1 each time. The correct result of course is 2500 and the computed result will indicate accuracy while the time taken to compute can noted.

Results are given for some computers described as follows: A Z80A system using CPM 2.2 and single precision produced 2304.86 in 4M 20S. Compiled and with double precision gave 2499.999999869949 in 38M 22S and the same system with Turbo Pascal produced 2500.0046341 in 6M 41S. A system with an 8086 processor running at 8mhz using MS-DOS 2.11 produced 2500.004634 in 1M 59S, and with an 8087 numeric processor added gave 2500.00000000118 in 6 seconds. An IBM PC-AT running at 8mhz answered 2500.004634 in 54 seconds. My T/S 1000 in FAST mode with a Z80B produced a respectable 2499.6758 in a modest 15m 29s. There you have it. Not too bad for an unenhanced basic.

For some perspective, it is reported in the same journal that the mighty CRAY X-MP/24 struggled for .7463S to answer 2499.999999999999 etc. Terrific.

```
  1 REM >SAVAGE BENCHMARK<
  5 CLEAR
 10 LET A=1
 20 FOR I=1 TO 2499
 30 LET A=TAN (ATN (EXP (LN (SQ
R (A*A))))))+1
 40 NEXT I
 50 PRINT A
```

More POKEs

Having been a ZX-81 computer enthusiast for a few years now, I have picked up many bits and bobs which have helped me on my journey through BASIC. I have compiled a list of some of these bits and bobs into the following list:

RAND USR 836
This is a loading function which loads your program and automatically breaks into it. To use the function, type in FAST and then RAND USR 836.

USR 3086
This function scrolls the screen and prints something at the same time. To use it in your program, type in PRINT TAB USR 3086;''whatever the message is'' or if you want to want it 5 spaces from the beginning of the line, PRINT TAB USR 836 + 5;''whatever the message is''.

RAND USR 0
This function clears all memory including whatever is above RAMTOP. It is also a quick way of restoring RAMTOP to normal if you have lowered it.

POKE 16419,x
This function will LIST any line from 0 to 255. Just LIST the line that you want to view from (e.g. LINE 17) and then type in POKE 16419,x where x is the line which you have just LISTed.

POKE 16418,0
This function will allow the use of the bottom two lines of the screen. Use the statement with a program, as it will not work after the program has been broken into or if it is not a program line or after the program has stopped. Do not INPUT or SCROLL in this mode, as the machine will crash. To get back into normal mode, type in: POKE 16418,2.

POKE 16510,0
If you have a machine code routine at line 1, and you do not wish it to be accidentally edited, type in POKE 16510,0 and line 1 will change to line 0. This line cannot be edited. If you want it changed back to line 1 again, type in: POKE 16510,1.

POKE 16389,68
If you have got a RAM-pack connected, and you wish to go into 1K Mode without disconnecting the RAM-pack, then you can lower RAM-TOP to 1K by typing in POKE 16389,68 and then NEW.

POKE 16389,128
If you are in 1K Mode, and you would like to get back to 16K Mode without losing your program, type in FAST and then POKE 16389,128. Now type in LIST and WAIT.
Yours faithfully,
S. Huggins,
Northampton.

ZX81 - LARKEN TIP
by John Thomas

John sent this item in a letter to me, that might be of interest/significance to ZX81/LARKEN owners. GFC

"A comment about the program DOSDOC.B1 that you sent me earlier. I am now using the modified LDOS EPROM that corrects the slow/fast problem of the earlier LDOS and find that the DOSDOC.B1 (not the earlier DOSDOC.BU) will not copy disks, it just crashes. After much study (this means about a case of Cokes) I found the elimination of line 9869 corrects the problem. Thought you might like to pass it on to others with the same hair-pulling situation. (We are getting to the age when we need all that we have)."

ZX81 SCREEN CLEAR
by John Thomas
San Antonio, Texas

Here's a nice touch for a program. It allows erasing "bottom lines" rather than all as in CLS.

Enter this demonstration program:

```
 1 REM 1 2 3 4 5 6
10 PRINT"XXXXXX"
20 PRINT "XXXXXX"
30 PRINT "XXXXXX"
40 PRINT "XXXXXX"
50 PRINT "XXXXXX"
60 PRINT "XXXXXX"
70 PRINT "XXXXXX"
80 PRINT "XXXXXX"
90 POKE 16515,20
100 RAND USR 16514
```

Then enter these POKEs

```
POKE 16514, 6
POKE 16515, 22
POKE 16516, 205
POKE 16517, 44
POKE 16518, 10
POKE 16519, 201
```

(This will change the look of the LINE 1 REM)

The example above will leave the top 4 lines (1, 20, 30, and 40) and erases lines 50, 60, 70, and 80.

To use this routine in a program, add the REM line to a program and make USR calls to it when desired. In the program, before using the USR call, POKE 16514 minus the number of lines you want left from the top. May be used many times in a program to keep just the important lines on a screen in view.

The M/C is relocatable as long as the program POKE and call are changed to suit.

Disk Droppings
by Greg Lloyd

In 1982 I bought a Sinclair ZX-81 at Gladstone's for $199.95. I quickly added a Memotech 64K expansion ram for another $ 249.95. After that, I bought a ZX Printer for a further $ 169.95. Great stuff, eh? I figured I had a state of Sinclair art technology. After that I had to buy software and books and magazines just to keep up with those who bought more conventional machines with keyboards and internal memory. The indivdual against the system, it's a battle Sinclair user's never stop fighting. Enough heavy thinking.

If I had spent my cash today, I could buy an IBM clone with 640k and a disk drive. I didn't and instead of being a CLONE-HEAD, consuming mass quantities of freeware and periferal cards, Im a QL'er whatever that is. This is not a short form for quite loony, or question little(from Sinclair) but a user of a QL. I didn't start out to be different, I just started out to be cheap. Let's face it, do you want to spend hundreds of dollars on something you don't really need ?

The moral of this story is, if you wait long enough, even a cheapskate can buy a decent computer. The alternate moral is given enough tries even Sinclair can build a computer that does something useful (that's why they stopped making it, right?). The QL comes with everything I need to justify the $ 109.95 U.S. price tag for the kit (through the Doug Dewey User's group).

I'm writing my column on my new QL using Quill or as it is known in the states, Word Processor. It's amazing that Sinclair would change the name for marketing the machine and software in the U.S. I think that the Brits figured we don't know what a quill is. Everybody knows a quill is what a procupine jabs you with after you disturb him during a meal or other bodily function. Well Quill is a thorn in the side to some, but to me it's right on target. Get the point?

I hooked up my printer, the Tandy Dandy, a DMP-105, to the serial port 2. All I needed to do was get the Co-Co II serial cord at my local Radio Shack, cut one end off and put a nine pin connector on the other. I connected the Tx (pin 2), Gnd (pin 7) and Cts (pin 5) to the three corresponding pins in the Co-Co cable and I was in business. Cost approx. $ 12.00 for cable and connector. Keep the cable short (6 feet) if you want to use 2400 Baud. You will lose characters and have to slow down to 600 Baud if you get longer than that. It works better than with my 2068.

Now I have a 128k machine with built-in serial ports, RGB output, the best TV display I have seen since I stopped using my ZX 81, and a group of software programs that fills my needs. I don't have many games and I don't see any need to buy many as this computer really does stuff that justifies it's place on my desktop.

Superbasic is a little disconcerting to a former ZX 81er. It is large and does lots of things. It does not really run very fast but if you have any other Sinclair computer you know that speed isn't everything. The keyboard one touch token system does not exist on this computer and entering a program of even a modest size becomes a major task. Some of the commands can be abreviated on entry to help entry but not all. Time will tell if speed can be increased on entry of a listing.

The keyboard is an improved version of the Spectrum Plus. I quess Quantum Leap applies here. It's better than all previous systems but still wanting. At least it is quiet but not as quite as my ZX-81. It is as good as any pc clone offering and besides it has a computer underneath it. I'm not much of a typist anyway so, as long as it works I won't complain.

The microdrives have worked alright so far so I have no complaints there. The cartridges are not cheap and don't have an infinite life. A disk drive interface from Cumana and twin 3" Amdek disc drives are now my primary level of storage.

I am impressed with the QL and see it as one of the best bargoons around today. Remember this is the last black box with Uncle Clive's name on it, go get one now they don't make 'em any more. /870804

ZX81- SELECTIVE LINE ERASE
by John Thomas
San Antonio Texas

Here's a nice touch for a program. It allows erasing "bottom lines", rather than all lines as with the CLS command.

In the program, POKE 16514,(24 minus the number of lines you want left from the top. May be used many times to keep just the important lines in view.

The following example leaves the top four lines (10,20,30,40) and erases lines 50, 60, 70, and 80. Next use could be to erase all but the top two, etc. The M/C is relocatable as long as the program POKE and CALL are changed to suit.

```
1 REM 1 2 3 4 5 6
10 PRINT "XXXXXXXXXXXXXX"
20 PRINT "XXXXXXXXXXXXXX"
30 PRINT "XXXXXXXXXXXXXX"
40 PRINT "XXXXXXXXXXXXXX"
50 PRINT "XXXXXXXXXXXXXXXX"
60 PRINT "XXXXXXXXXXXXXXX"
70 PRINT "XXXXXXXXXXXXXXXX"
90 POKE 16515,20
100 RAND USR 16514
```

POKE the following numbers into line 1.

```
POKE 16514,6
POKE 16515,22
POKE 16516,205
POKE 16517,44
POKE 16518,10
POKE 16519,201
```

An interesting routine from one of our members. GFC

FROM THE SECRETARY's MAILBAG
by G. Chambers

The Sinclair Louisville User Group newsletter (SLUG) contains an article originally from SUM magazine, on how to make the TS2068 Power Supply run cooler. The premise is that supplying the TS2068 with a lower voltage will reduce the amount of extraneous noise at the SAVE and LOAD jacks, thus making the loading and saving of programs more reliable.

The Chicago Area Timex User Group newsletter (NITE-TIMES NEWS) contains instructions for building a ROM-switching circuit for your TS2068. Same idea as the Roman ROMswitch except that the second ROM is piggybacked and soldered to the 2068 ROM. A pin from each ROM is bent out and switched.

There is also an article on how to add a TTL monitor (monochrome) to your 2068. Both articles are by Gary Lessenberry. Want a copy of these articles? Contact me.

The Greater Cleveland Sinclair Users Group's news letter (THE RAMTOP) contains the second part of the DIGITIZER article originally published in SINC- LINK. Seems there were several errors in the schematic published with the article. How do these things happen? Anyway, the circuit will not work as shown. Ifanyone wants the corrections before the get republished in this newsletter, please contact either Eric Michaud or myself.

The RAMTOP also mentions that John Warburton, of SUNSET Electronics, 2254 Taraval St.,San Francisco, CA 94116 (tel. 415-665-8330) repairs Sinclair computers. This could be useful, since TIMEX no longer repair them. I suggest that you call first to confirm this.

The Capital Area Timex/Sinclair Users Group newsletter (CATS) has a full-page advert. for a program called DESKTOP PUBLISHER. As the blurb states "New Program for the TS2068 Allows User to Layout Pages for Memos, Reports, Bulletins, Newsletters, and Documents". Put out by Charles Stelding, 1415 South Baxter, Tyler, TEXAS 75701. Cost US$20+1.25 P&H.

Wymill Corp. Box 5904 Bellingham, WA 98227-5904 have sent us a press release announcing a Non-Volatile System for the TS1000. It consists of a 32K memory board and a Rigter Operating System to go with it. The 32K is divided into four 8K blocks which can be independantly switched. Many other features. All you ZX81 fans, drop me a line if you want a copy of this leaflet. It is called the DELTA DEVICE. Cost US $80.

META MEDIA PRODUCTIONS, 726 West 17th, Vancouver, B.C. V5Z 1T9 are offering a new complete telecommunications package for the QL. Called Q_LINK, it features Xmodem and ASKII File Transfer,Autodial, Redial, and a host of other features. Supplied on MDV or 5¼" disk (specify tpi), the cost is US $20+$2 P&H.

TS2068 / SPECTRUM

DOWN UNDER

by George White

If your computer's memory is clear from 58300 to 65290 (most are) you can now experience April First in Australia by entering the program listed below.

Save the program to tape before running to insure that the data statements have been entered correctly. After running, the special effect can be called with RANDOMIZE USR 58300. The semicolon at the end of line 40 is important.

```
*                                                    *
 10 FOR i=58300 TO 58357
 20 READ a
 30 POKE i,a
 40 PRINT PEEK i;" * ";
 50 NEXT i
100 DATA 33,0,64,17,10,252,229,1,0,24,
    197,175,6,8,78,203,1,48,2,203,199,
    15,16,247,18,35,27,193,11,120,177,
    32,233
110 DATA 1,0,3,17,10,255,126,18,35,27,
    11,120,177,32,247
120 DATA 209,33,11,228,1,0,27,237,176,
    201
150 PRINT FLASH 1;AT 18,4;" WELCOME TO
    AUSTRALIA "
160 PAUSE 150
170 RANDOMIZE USR 58300
180 PAUSE 0
```

LARKEN CARTRIDGE DISK OPERATING SYSTEM

by G. F. Chambers

Larry Kenny has brought out a cartridge-based Disk Operating System (DOS) for his Disk System. This article consists of a number of observations and tips that I have made during a month of use. Although this article covers many aspects of the cartridge DOS it is primarily oriented to the user who has the original disk interface board and now has the new cartridge. It is not a comprehensive review of the LARKEN System.

The cartridge of course occupies the cartridge port on the right hand side of the computer. With the cartridge in place no difference will be noticed in the normal operation of the TS2068. If one has a Spectrum ROMswitch the operation is similarly unaffected. To call the Disk Operating System into operation in either mode one must prefix the normal commands with PRINT USR 100:

Commands that the DOS accepts are LOAD, SAVE, MERGE, FORMAT, CAT, ERASE, and GOTO. These are standard 2068 tokens and are found on the keyboard. There are also several other commands not related to the disk operation, that the DOS will recognise and act upon. They are DRAW, CIRCLE, INK, PAPER, POKE, OPEN, and PRINT. Except for the use of a prefix "PRINT USR 100:", the commands are entered in the usual 2068 manner.

The cartridge contains an 8K EPROM and an 8K RAM chip. The cartridge operates by being bank-switched in place of the 2068 ROM during DOS operations, the command doing this being the PRINT USR 100.

I had no difficulty using my cartridge in the Spectrum mode. However several other club members did experience difficulties. The cartridge simply would not function in the Spectrum mode. Consultations with Larry determined that the cause lay in an ideosyncracy of certian Spectrum ROMs. It was solved by lifting pin 22 of the Spectrum ROM out of it's socket and bridging ROM pins 22 and 27 together.

Anyone familiar with the old LARKEN DOS will know that BASIC programs saved from the old DOS could not be loaded into the Spectrum mode, nor vice versa. This was because the old DOS saved the system variables as part of it's SAVE routine. In the new DOS this restriction does not apply. BASIC programs saved from the Spectrum can now be loaded into the 2068 and vice versa. This corresponds to what you can do with tape loading. There is one short-term drawback to this, however. It means that in converting your old disks to the new DOS you must load the existing BASIC programs with the old DOS and resave them with the new DOS. If you attempt to load an old BASIC program with the new DOS you will be greeted with an "out of memory" report. This may puzzle you, but not to worry, it is the computer's way of responding to a problem for which it does not have a proper error report. Don't be confused by it; it is not a sign of memory loss!

The new DOS contains a NMI memory SAVE feature. To activate this feature you will need to construct a pushbutton circuit and connect it to the old LARKEN interface board (The new LARKEN interface board incorporates the switch and circuit). Larry's description of this switch in his initial documentation is not easy for non-technical people to follow. I have constructed one as a sample; if any member wishes to borrow it for a model ask me (I do not wish to make any up). The switch captures the computer memory from address 22490 upwards to the top of memory, 22 tracks worth. This means that you can get three programs on one disk, plus room for a "MENU" program and one or two SCREEN$ displays.

You will notice that what you capture with the NMI button starts with the screen attributes (colors), but does not save the text/image on the screen. This means that you need to capture the program at a critical stage in the program, i.e. immediately prior to an instruction screen. I find that the best way to handle this is to include in the menu an instruction such as "PRINT AT 15,0;"PRESS KEY "J" WHEN LOADING IS COMPLETE". This is displayed on the screen during and following the loading of the 22 tracks, and provides a prompt when otherwise the computer seems to be hung up. Of course you need to insert the name of the key that will activate that particular program. You will also neet to place the message on the screen in the location most appropriate for that particular program, and possibly use a different INK colour.

Various of our members have written many utilities for the LARKEN system. These will continue to be useful. These utilities make use of various of the original LARKEN disk DOS', and it turns out that these utilities are still useful, and in fact will continue to make use of the old disk DOS'. You should save the EPROM DOS, located in upper memory, to disk and use it as another disk DOS. To do this, do a CLEAR 61000 and an OUT 84,64. Then SAVE "LDOS64.C5" CODE 63488,2048 to tape. Then momentarily shut off the computer, CLEAR 61000, load the just-saved code, and save it to disk using PRINT USR 100:SAVE "LDOS64.C5" CODE 63488,2048. You will now have the EPROM DOS on disk, and you can simply load it as any other disk DOS. The CLEAR 61000 command needs to be used only in the Spectrum mode.

A point of interest. Larry Kenny has brought out a new interface board for the 2068. It uses a disk controller chip which simplifies the board design and also makes for a less costly interface board. It would store 360K per disk, and permit use with a variety of drives. I found myself interested in getting one of these until a thought crossed my mind. It seems likely that with this new board I would not be able to make use of the above-mentioned utilities. This is because the disk is probably controlled in a different manner, and not amenable to control from the existing disk DOS'. If this proves to be so it means that the new interface board will not be able to make use of the utility programs already written. In fact it seems to me that it would require a new disk DOS (or several

DOS') to be written, around which other new utilities could be written. You see, using the bank-switched DOS means that you are limited to the disk commands that are provided in that DOS. You cannot access it from BASIC to manipulate the disk as we have been able to with the disk DOS'. I have written to Larry to clarify this point, but until it is resolved I have to add a caution to anyone contemplating an upgrade. You could be worse off.

The cartridge DOS has an AUTOSTART routine, whereby you can auto start the disk drive upon turning the computer on. You hold the ENTER key down while turning on the computer, and presto, the program AUTOSTART is loaded. The AUTOSTART program can be any BASIC program you choose and is saved by entering PRINT USR 102: GOTO (starting line number). This works very much like the NMI save routine except that it saves only to RAMTOP. Before saving the program via the AUTOSTART routine you should lower RAMTOP to just above the BASIC program. Otherwise you will save 22 tracks worth of computer memory!!

I suggest that if the disk is to hold several programs, that the AUTOSTART feature be used to save a menu program. Normally if you are in the 2068 mode you will find that the AUTOSTART will need 4 tracks to hold a modest "MENU.B1" program. If you CLEAR 30000 this will give you room for such a program and not use more than 4 tracks. Because the Spectrum BASIC program area starts much lower in memory it is possible to save a small program with AUTOSTART and use only 1 track. Mind you this will be a short program, only about 500 bytes or less.

On the 2068 you can determine where to CLEAR RAMTOP by using the PRINT FREE routine. The Spectrum does not have the PRINT FREE function but you can get the same result by entering PRINT 65535-USR 7960.Be sure to leave about 200 bytes of free memory or your program will not have room for variables and will give you a genuine out of memory error report. Also, have the menu program CLEAR to higher memory or the next program will also produce an out-of-memory error report.

An AUTOSTART saved on the 2068 will not load on the Spectrum, and vice versa. You will get the same "out of memory" report mentioned earlier.

There is some merit to saving the AUTOSTART program as a regular type program as well. This is because the AUTOSTART program can only be loaded via the startup routine; the computer will not recognise AUTOSTART as a valid program name in the normal loading process. I have found occasions when I wished to load the program by not using the AUTOSTART routine.

Using the NMI routine, you will get a series of programs named "NMI-Sx.CM". Not too descriptive a title. In fact, after a while you will not be able to tell one from another except by loading it. That is where the utility called RENAME will come in useful. After you have saved a program via the NMI routine, call up the RENAME utility and use it to rename the program. It works.

The DOS allows for an abbreviation of the PRINT USR 100 command. If you enter the command PRINT USR 100: OPEN #4,"dd" , you can now simply enter PRINT #4: as a prefix to commands. I do not use this too often, but it is useful to place this command in a MENU program so that it gets entered automatically at the start of computer use. Also, when I load a disk that contains a lot of the utilities using the disk DOS', I have the MENU program load the LDOS64.C5 (disk) DOS as part of it's initialization routine so it is available when needed by the utility programs.

QL WAYFARER BY REGINALD COTTLE

This issues' article will be short due to a few complications. Since writing my last article my QL broke down with the cartridge that Frank French supplied us in the cartridge port. Part of the problem was a short in the micro-drive which rendered Frank French's cartridge useless. I was , however, able to make a 3 1/2" working disc copy with a copy to disk utility that comes bundled with the C.S.T. disc system, so those programs are available on 3 1/2" disc. After the untimely demise of my MDV1- drive I found that the disc drive system was functioning and continued to use it for 2 days until system initialization became unreliable with constant crashing and periodic failure to reset. I called A+ Computer Response and found that providing you call first, A+ will issue an authorization number and for $75.00 U.S. will either repair or replace your QL for you. Happy, I bundled up my QL and with a money order enclosed and I sent it off to A+ and waited. The turn around time was one month. The Timex turn around was about the same so for that I can't complain. Although there is a problem! During the one month my QL was away I had occasion to hear a recorded conversation with Rod Gowen of RMG Enterprises regarding repair of 2068's. In the course of the conversation QL repairs were mentioned. Rod said he uses the QL for his business computing and his needed repair at one time and was returned to A+ several times before it was returned in proper working order. He claims they do not bench check repaired units under load with additonal memory and peripherals before returning the repaired units. I sent my unit away July 9th/87. It was returned August 5th/87. I first tested it without any peripherals. The microdrive is now working again although after using the computer for 30 minutes it crashed. I was a little upset and never bothered to re-set and went to make a coffee, when I returned I found it has re-set itself. I decided to put a load on it and see what happened. I connected my CST 512K Ram expansion, my Eidersoft mouse and ice Rom, my CST disc interface and CST supplied NEC dual 3 1/2" discdrives. The system now crashes and resets itself within short regular intervals and eventually after a few minutes of dark screen produces a vertical line pattern with flashing horizontal underscores or resets to the initialization screen. The July issue of Sinclair QL World Trouble Shooter a problem solver column by Bryan Davies has an insert regarding Delta 128K interfaces some were produced with a version 1.12 EPROM, others with a 1.14 EPROM soon developed a problem - the start-up screen would not come up reliably and eventually there was no screen picture. The QL service manual indicates this is a symptom of a defective ULA ZX8301 chip, next to the main processor. I realize that is what is happening with my unit and now I probably need a new ULA. Although I mentined this when I first returned my unit to A+. It is apparent this complaint was not seriously and thoroughly bench checked as my QL came back to me only half repaired. Also, apparently with the Delta interfaces and 1.14 EPROMS coupled with NEC drives a number of 8301's failed according to Bryan Davies, yet when 1.12 EPROMS and Mitsubishi drives were used all was well. When I purchased my CST drives and CST interface I was informed that CST was moving from using Mitsubishi drives to the less expensive NEC drives. So here I am in the dark wondering was it the short in the micro-drive that caused a fault in the 8301 or it is a fault in the CST configuration and when I return the QL to A+ will it be properly repaired and bench tested under load before it is returned. Stay tuned, the Saga continues. In the meantime I amy buying a second QL to avoid any further down time. I also intend to fit it with the new Rom Sharp's Inc. is supplying for $39.95 US. that reduces power draw by 20% and runs 50 degrees cooler on the heat sink. Along with the ROM expansion board that lets you plug 3 EPROMS' in and use them simultaneously. I figure it will be 30 days at least before the QL being sent back for repair or the new system arrives. Hopefully by then the QL library will be back on track. In the meantime my address has changed, all contibutions to the library and correspondence to or for the QL Wayfarer should now be forwarded to:

TTSCU-QLL
or The Wayfarer
c/o Reginald Cottle
840 Eglinton Ave. West
Apt. 302
Toronto, Ontario
M5N 1G1

Hopefully by next issue we will have a catalog ready and a review of some contributions forthcoming along with the appropriate fee schedule. At this time the only copy facility I have facilitates transfer from micro-drive to disc drive so all contributions should be submitted on micro-drive cartridge until we have a reverse conversion utility.

KEEP THE SINC-LINK STRONG

We need your articles, programs, comments, or musings.

R. Cottle

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Color Monitor 12 in. screen, composite type, NEC model JC-1225ma, with built-in audio amplifier and speaker, less than one year old. Excellent for use with Timex/Sinclair 2068 computer or Commodore 64/128. Asking $199.00.
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Agincourt, Ont.,
M1S 2K7
Tel. (416) 293 6789

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NO. COLUMNS: 80-96 (normal or emphasized pica or elite characters), 40-48 (double-width expanded characters), 66 (reduced double-width expanded characters), 132 (condensed characters)
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André Laviolette
1385 ouest, av. Bernard suite 16
Montréal QUEBEC H2V 1W1 CANADA
Phone: (514) 273 4103

BOB'S NOTEBOOK

Having recently acquired a full-width printer, I can now do these items for the newsletter via Tasword. So as a starter, I'll pass along some of the lessons I have learned that may be value to others converting to a big printer.

First of all, I have a Smith-Corona Fastext 80 which is coupled to the computer via Peter Hacksel's printer interface and software. The latter is generally acceptable in that it works as he says it should. But the way it performs the TAB function is poor and generally useless with my programs that rely on TABbing for good displays. Also, my printer is not Epson compatible and therefore his programs for lo-res and hi-res screen copying will not work. Lo-res screen copying can be accomplished using a routine that I show below and which Charlie Urban provided.

When it came to adapting Tasword to this printer, I found that following the manual and some notes by George Chambers made it relatively easy and I soon had the graphics keys adapted to the SCM printer.

So, I have Elongated on graphics key 1; Condensed on key 2; Underline on key 3; keys 4, 5 and 6 are unused for now; Elite and Pica (normal) are on key 7; and Form Feed is on key 8 (caps).

These graphics characters have to be embedded into the text as you type it in to Tasword. I found it handy to have a crib sheet so I drew one up and here it is. The first two lines show the actual codes used with each graphic character. I keep mine on a cork board just ahead of me as I use Tasword.

CONTROL CODES FOR FASTEXT 80

CAPS	27;87;1	15	27;45;1				27;77	12
none	27;87;0	18	27;45;0				27;80	
SYMB	1	2	3	4	5	6	7	8
CAPS	ON	ON	ON				ELITE	FF
none	OFF	OFF	OFF				PICA	
	ELONGATED	CONDENSED	UNDERLINE					FORM FEED

PAGINATION

Paging some long text gives a better appearance and I experimented with ensuring a top and bottom margin on each page.

I found it relatively easy to paginate by using a crib sheet which is an alternative to using the form feed graphic character. Here is my crib sheet:

PAGINATION CRIB SHEET

PAGE	START LINE	END LINE
1	1	60
2	61	120
3	121	180
4	181	240
5	241	300

This works for my paper which is 28 cm or 11 inches long (ie, between perforations.)

I start all printing with a perforation line just even with the top of the print head. This usually means leaving in the previous page and tearing it off later.

Using form feed embedded in the text will cause the paper to feed out automatically up to the next perforation line according to the predetermined page length, which just happened to be right for my page length. However, it is possible to set the page length to another value but the printer defaults to 66 lines on power up or reset.

One thing I learned early in the game was that when calling for elongated printing, it is important that the print head be at the left margin at the start of printing. Otherwise, the print head will move to the left and cause a crash (on the paper and in Tasword). This is corrected by powering down the printer and then powering up again. The print head (carriage) will be at the left margin and the printing should go according to plan.

Here is the short routine to print the screen display in lo-res. It will not print graphics,though.

```
9940 CLS: PRINT AT 6,2;"LPRINT loaded":REM Hacksel's
9941 INK 9
9942 PRINT AT 8,2; "USE POKE 26704,254 for LPRINT "
9943 PRINT AT 10,2;"USE 'GO TO 9950' & 'COPY' for
     SCREEN COPY"
9944 PRINT AT 14,2;"Press CSST-BREAK to continue"
9950 PAUSE 0: IF INKEY$="255" THEN GO TO 9960
9955 IF INKEY$="254" THEN GO TO 9980
9957 IF INKEY$<"254" THEN GO TO 9950
9960 POKE 26704,254: POKE 65535,0
9965 FOR f=0 TO 21: FOR g=0 TO 31
9970 LPRINT SCREEN$ (f,g);
9975 NEXT g: LPRINT: NEXT f
9980 STOP
```

Bob Mitchell 870702

needed, thus "turning off" the ROM in the same way a RAM pack turns off the internal RAM. With the ROM out of the way, we are then free to use this memory area.

The circuit shown in Figure 1 utilizes this principle in a very simple fashion. (To learn a little about logic gates to follow this, see Radio Shack's *Engineers Notebook*.) Using a single 3 input triple NOR gate chip (74LS27 or equivalent), you can easily decode and select/deselect the RAM/ROM to utilize addresses 8192-16383.

The schematic shows that when A13 is high (i.e., equal to 2^{13} or 8192) *and* when A14 is low (i.e., equal to 0) *and* when memory request (MREQ) is low, the output from the second NOR gate will be high. (MREQ goes low whenever the Z80 CPU "wants" to read from or write into memory.)

Looking at it another way, the output from NOR gate #2 will be high whenever memory is requested from addresses 8192-16363 (or addresses 40960-49151, since the relationship A14 low, A13 high also occurs in that upper address area).

If we take this high output from NOR #2 (ROM CS') and put it to the ROM CS line on the board, the ROM will be turned off when the above memory locations are addressed. The diode shown in the schematic is necessary to prevent a low from enabling the ROM at inappropriate times, but it allows a high to get through when we want it.

We can take this same high output, put it through the third NOR gate (thus inverting it to a low—RAM CS') and use it to enable our on-board RAM via the RAM CS pin (pin #18). You must first remove the RAM chip and bend out the RAM CS pin so that it no longer makes contact with the disabling +5 volts coming from your external RAM pack.

What you have after all this is your on-board RAM chip selected (i.e., ready to send or receive data) and your ROM deactivated whenever memory locations 8192-16383 or 40960-49151 are addressed. You have decoded a lot more memory area than you need for your 1K-2K RAM chip, but they are usually unused areas anyway.

Be aware, however, that some peripheral devices use the 8K-16K area in their hardware design, so in those cases this decoding scheme could give you some real problems. Consult your user's manual if you have any extra hardware (other than a 16K RAM pack) before you jump into this modification. If it uses *any* memory locations in that area you had best leave this project alone.

Another theoretical note: you will note on the schemactic that the signal to the RAM CS pin (pin 18 on a 1 or 2K chip) from the third NOR gate also goes to pin 20. This is the READ enable pin which can be held low, whether the RAM chip is being READ from or WRITTEN into. (There is also a WRITE enable pin on the memory chip which permits data to be written into RAM when low and read from RAM when it is high, as long as the READ enable pin is held low at all times.) Since the Timex/Sinclair circuit board ties together pins 18 and 20 (and thus to the RAM pack's +5V), you have to disengage both of these pins from the socket and wire them together to your RAM CS' signal.

The optional DPDT switch (switch #1) will allow you to switch back to the on-board RAM at its usual memory location when you are not using the 16K RAM pack. If you *never* want to use the on-board RAM without the RAM pack, then just wire the circuit in without the switch.

Adding a Reset Switch

If you have done much MC programming, you are probably painfully aware of how easily MC programs can crash your computer. Even if you have your MC program in the 8192-16383 area (where it is safe from NEW) and you crash the computer and unplug the power, good-by MC.

A simple way around this uses the RESET pin present on the Z80 CPU. This pin (pin #26) is held high at most times. If you temporarily pull this pin low, the CPU will stop what it was doing and will go back to the beginning of the ROM (address 0), just as if you had just turned the power on.

During a crash, making RESET low will effectively get the computer going again, but, since the power was not interrupted, the MC program that you had in the 8192-16383 area will remain perfectly intact (and ready to crash your computer again!).

By connecting a momentary SPST switch (switch #2) and a 1K ohm resistor between RESET and ground, you will have a handy reset button to use in the event of a crash. Remember, however, that if you press reset at any other time you will wipe out your program above 16384, just as if you had pressed NEW.

NEXT ISSUE WE WILL COVER CONSTRUCTION

Random Squares

J. C. Newton

"Random Squares" fills your screen with randomly placed overlapping squares. The results suggest some modern types of art.

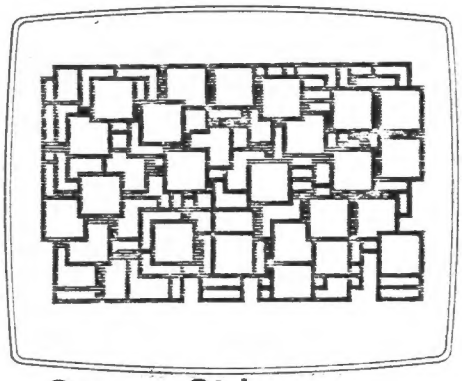
J. C. Newton, North West River, Labrador, Canada A0P 1M0.

Line 30 lets you stop without leaving any incomplete squares by pressing the A key.

With 1K RAM only a limited number of squares can be displayed.

```
 3 REM "SQUARES"
 5 DIM A$(4,4)
10 LET A$(1)="  ":
12 LET A$(2)=" ":
14 LET A$(3)=" ":
16 LET A$(4)="  ":
20 LET S=INT (RND*29)
22 LET T=INT (RND*17)
25 FOR H=0 TO 3
27 PRINT AT T+H,S;A$(H+1)
28 NEXT H
30 IF INKEY$="A" THEN STOP
35 GOTO 20
```

Graphics notes:
10: E;7;7;R
12, 14: 5; space (2);8
16: W;6;6;Q



Screen Strings

Robert J. Midura

"Screen Strings" illustrates the technique of storing the screen display in a string variable. This has the advantage of being able to print almost instantly with one simple PRINT statement. No time consuming FOR-NEXT loops are needed.

To use the program, put the computer in SLOW mode, type RUN 100 and ENTER. When the program stops with the message 0/160, type PRINT P$ to see the stored string.

```
 10 DIM P$(704)
 20 LET X=1
 30 LET L=PEEK 16396+256*PEEK 1
6387+1
 40 FOR L=L TO L+725
 50 IF PEEK L=118 THEN GOTO 80
 60 LET P$(X)=CHR$ PEEK L
 70 LET X=X+1
 80 NEXT L
 90 RETURN
100 FOR I=1 TO 22
110 PRINT TAB INT (RND*20+1);"T
EST PATTERN"
120 NEXT I
130 FAST
140 GOSUB 10
150 CLS
160 SLOW
```

Sound Experimentor

Rob Miles

Unlike most home computers the QL has a very limited noise making capability. What there is can only be dragged out by using the enigmatic BEEP command. This has 8 arguments, all of which are obscure. The only way to produce something vaguely melodic is by trial and error. The following quickie allows you to do exactly this.

```
100 REMark **** QL User -Beep experiment
110 REMark ****  Rob Miles 1985
120 duration=5000:pitch=100:pitch_2=0:grad_x=0:gra
d_y=0:wrap=0:fuzzy=0:random=0
130 REPeat sounder
140 CLS
150 set "Duration (-32768..32767) ?",duration,2
160 set "Pitch (0..255) ?",pitch,4
170 set "Pitch_2 (0..255) ?",pitch_2,6
180 set "Grad_x (-32768..15) ?",grad_x,8
190 set "Grad_y (-8..7) ?",grad_y,10
200 set "Wrap (0..32767) ?",wrap,12
210 set "Fuzzy (0..15) ?",fuzzy,14
220 set "Random (0..15) ?",random,16
230 AT 18,0:PRINT "Beep ";duration;",";pitch;",";p
itch_2;",";grad_x;",";grad_y;",";wrap;",";fuzzy;",
";random
240 BEEP duration,pitch,pitch_2,grad_x,grad_y,wrap
,fuzzy,random
250 dum$=INKEY$(-1)
260 END REPeat sounder
270 DEFine PROCedure set (name$,var,position)
280 LOCal buf$
290 AT position,0:PRINT name$;" ";var
300 AT position,0:PRINT name$;" ";
310 INPUT buf$
320 IF buf$<>"" THEN var=buf$
330 AT position,0:PRINT name$;" ";var;"      "
340 END DEFine set
```

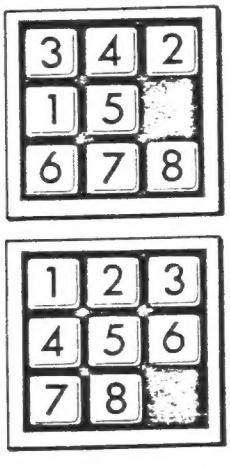
Easel Print

D Duncan

The following 7 liner shows exactly how to use the graphics dump provided with EASEL. All you need is an EPSON compatible printer and the EASEL cartridge in mdv2.

```
120 MODE 8:PAPER 2:CLS
130 FOR n=1 TO 150
140 INK 7:FILL 1:CIRCLE n,50,20,.5,-n/2
150 INK 2:FILL 0:CIRCLE n,50,20,.5,-n/2
160 NEXT n
170 REMark Dump to Epson printer
180 a=RESPR(1024):LBYTES mdv2_gprint_prt,a
190 CALL a:OPEN #3,ser1:LIST #3:CLOSE #3
```

Shifting Squares



Initial (a) and final (b) positions for the tile shifting game.

```
12   WINDOW 452,236,60,20
14   MODE 8
20   init
30   print_board
40   set_shuffle
50   find_space
60   REPeat game
70    win_pos
80    IF S%=0 THEN EXIT game
90    rnd_mve
100   do_move
110   MOVE%=MOVE%+1
120   print_board
130  END REPeat game
140  PRINT "SOLVED IN ";MOVE%
1000 DEFine PROCedure init
1010 DIM B%(9)
1020 DIM M$(9,4)
1030 DIM M%(9)
1040 Q%=0
1050 DATA "24  ","135 ","26  ","157 ","2468"
1060 DATA "359 ","48  ","579 ","68  "
1070 DATA 2,3,2,3,4,3,2,3,2
1080 RESTORE 1050
1090 FOR I=1 TO 9
1100  READ M$(I)
1110 END FOR I
1120 FOR I=1 TO 9
1130  READ M%(I)
1140 END FOR I
1150 MOVE%=0
1499 END DEFine init
1500 DEFine PROCedure print_board
1510 FOR I=1 TO 9
1520  PRINT B%(I);" ";
1530  IF I=INT(I/3)*3 THEN PRINT
1540 END FOR I
1550 PRINT
1560 pause_1
1999 END DEFine print_board
2000 DEFine PROCedure set_shuffle
2010 FOR I=1 TO 9
2020  B%(I)=I
2030 END FOR I
2040 P%=9
2050 N%=RND(25 TO 34)
2060 FOR Z=1 TO N%
2070  rnd_mve
2080  do_move
2090 END FOR Z
2100 Q%=0
2999 END DEFine set_shuffle
3000 DEFine PROCedure find_space
3010 FOR I=1 TO 9
3020  IF B%(I)=9 THEN P%=I
3030 END FOR I
3999 END DEFine find_space
4000 DEFine PROCedure win_pos
4010 S%=0
4020 FOR I=1 TO 9
4030  IF I<>B%(I) THEN S%=1
4040 END FOR I
4999 END DEFine win_pos
5000 DEFine PROCedure pause_1
5010 FOR I=1 TO 500
5020 END FOR I
5999 END DEFine pause_1
6000 DEFine PROCedure rnd_mve
6010 I%=RND(1 TO M%(P%))
6020 J%=M$(P%,I%)
6999 END DEFine rnd_mve
7000 DEFine PROCedure do_move
7010 T%=B%(P%)
7020 B%(P%)=B%(J%)
7030 B%(J%)=T%
7040 Q%=P%
7050 P%=J%
7999 END DEFine do_move
```

MURPHY'S LAW

Whenever you don't understand what you are doing, remember to always do it neatly.

Any technological problem can be solved given enough time and money, but you will never be given enough time and money.

A computer program will always do what you tell it to do, but never what you want it to do.

The secret to successful presentation is sincerity. Once you can fake sincerity you've got it made.

Postmaster, if Undelivered Return to :

Toronto Timex - Sinclair Users Club
P. O. Box 7274 Stn. A
Toronto, Ont., M5W 1X9
Canada

To